

SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING MAY, 1922.

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For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements the reader is referred to this REVIEW for April, 1920, 48:225.

From Table 1 it is seen that direct solar radiation intensities averaged above normal for May at Washington and Lincoln and slightly below normal at Madison.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged above the May normal at Washington and slightly below at Madison.

Skylight polarization measurements made on four days at Washington give a mean of 60 per cent, with a maximum of 63 per cent on the 8th. These are slightly above the average for May. At Madison, measurements made on five days give a mean of 60 per cent, with a maximum of 66 per cent on the 13th. These are about normal values for May.

TABLE 1.—Solar radiation intensities during May, 1922.

[Gram-calories per minute per square centimeter of normal surface.]
Washington, D. C.

Date.		Sun's zenith distance.										Local mean solar time.	
		8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon.
75th meridian time.	Air mass.												
	A. M.				11.0	P. M.							
	e.	5.0	4.0	3.0		2.0	2.0	3.0	4.0	5.0	e.		
		mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
May 1	7.57		0.64	0.79	0.98	1.22					4.17	
8	5.79	0.87	0.99	1.10	1.27	1.53					5.79	
16	10.21				0.95						6.03	
19	10.21				1.16		1.17				7.57	
20	9.47	0.70	0.81	0.94		1.39					7.87	
23	14.10				0.73						12.08	
24	10.97				0.70						12.24	
25	10.97					1.29					10.59	
29	9.14	0.62	0.75	0.91	1.10	1.33	1.08	0.89			8.48	
Means		0.73	0.80	0.94	0.98	(1.35)	(1.12)	(0.89)				
Departures		+0.10	+0.07	+0.10	-0.01	+0.05	+0.12	+0.11				

Madison, Wls.

May 5.....	6.76	.....	.....	.....	1.11	.....	.....	.....	.....	6.76
7.....	8.48	.....	.....	.....	1.16	.....	.....	.....	.....	7.29
10.....	14.60	.....	.....	.....	0.97	.....	.....	.....	.....	15.65
11.....	13.13	.....	.....	0.83	.....	.....	.....	.....	.....	14.60
13.....	7.04	0.83	0.93	1.05	1.23	1.41	.....	.....	.....	6.27
17.....	8.81	.....	.....	.....	1.08	.....	.....	.....	.....	7.87
20.....	10.59	.....	.....	.....	0.97	.....	.....	.....	.....	10.97
27.....	7.87	.....	.....	.....	.....	1.48	.....	.....	.....	8.48
29.....	7.87	.....	.....	.....	0.92	1.07	.....	.....	.....	10.21
Means.....	.....	(0.83)	(0.93)	0.93	1.08	(1.44)	.....	.....	.....	.....
Departures.....	.....	-0.01	-0.08	-0.03	-0.03	+0.09	.....	.....	.....	.....

Lincoln, Nebr.

May 3.....	10.97	.....	.....	.....	1.05	.....	.....	.....	.....	7.87
4.....	6.27	.....	.....	1.05	.....	.....	.....	.....	.....	4.17
5.....	8.18	.....	.....	.....	1.15	.....	.....	.....	.....	9.47
6.....	7.57	.....	.....	.....	.....	1.22	0.99	0.80	0.71	3.81
11.....	8.48	.....	.....	.....	.....	0.83	.....	.....	.....	4.57
12.....	5.79	.....	.....	1.23	.....	.....	.....	.....	.....	4.57
16.....	6.76	.....	.....	.....	1.10	.....	.....	.....	.....	9.14
18.....	6.76	.....	.....	1.05	1.22	1.24	1.01	0.83	.....	4.57
19.....	9.47	.....	.....	.....	1.40	1.25	1.05	.....	.....	6.27
Means.....	.....	.....	.....	1.11	1.15	(1.40)	1.14	1.02	(0.82)	(0.71)
Departures.....	.....	.....	.....	+0.14	+0.01	+0.02	+0.06	+0.11	+0.06	±0.00

1 Extrapolated.

TABLE 2.—Solar and sky radiation received on a horizontal surface.

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
Apr. 30.....	cal. 417	cal. 484	cal.	cal. -46	cal. +32	cal.	cal. -1,976	cal. -1,427	cal.
May 7.....	534	557	.....	+56	+92	.....	-1,551	-785	.....
14.....	458	416	.....	-29	-57	.....	-1,786	-1,193	.....
21.....	501	423	.....	+10	-56	.....	-1,714	-1,587	.....

MEASUREMENTS OF THE SOLAR CONSTANT OF RADIATION AT CALAMA, CHILE.

By C. G. ABBOT, Assistant Secretary.

[Smithsonian Institution, Washington, June 29, 1922.]

In continuation of preceding publications, the following table contains the results for the solar constant of radiation obtained at Montezuma, near Calama, Chile, in March, 1922. The values of p/p_{sc} are given at air mass 2, or, if not, the air mass is stated. The reader is referred for further statements regarding the arrangement and meaning of the table to the REVIEW for February, August, and September, 1919 (vol. 47).

Date.	Solar constant.	Method.	Grade.	Transmission coefficient at 0.5 micron.	Humidity.		Relative humidity.	Remarks.
					p/p_{sc}	V. P.		
1922							Per cent.	
A. M. Mar. 2.....	cal. 1.874	Eo.....	VG..	0.858	10.547	0.47	49	Cumuli forming in east.
3.....	1.932	Eo.....	E....	.870	.528	.33	33	Cloudless.
P. M. 4.....	2.059	Eo.....	G....	.875	.561	.36	19	Cirri over high peaks.
6.....	1.880	Eo.....	G+..	.866	.612	.34	20	Some cumuli over peaks.
A. M. 7.....	1.965	Eo.....	E+..	.871	.631	.31	31	Cloudless.
P. M. 8.....	1.892	Eo.....	VG..	.857	.650	.22	15	Do.
10.....	2.003	Eo.....	VG..	.834	.698	.23	12	Do.
A. M. 11.....	1.963	Eo.....	E....	.877	.727	.18	17	Do.
12.....	1.947	Eo.....	E....	.872	.728	.25	24	Do.
P. M. 13.....	1.908	Eo.....	VG..	.876	.660	.23	90	Small patch of cumulus in north.
A. M. 17.....	1.933	M ₁₋₂₁	S....	.869	2.596	.34	21	Cirri scattered about sky.
22.....	1.937	M ₁₋₂₄	S....	.879	2.697	.27	15	Patches of cirrus in north and east.
23.....	1.957	M ₁₋₂₅	S....	.844	.556	.29	26	Patches of cirrus in north, forming early.
24.....	1.928	M ₂	S....	.....	.....	.....	.....	.....
25.....	1.944	M ₁₋₅	S....	.....	.....	.....	.....	.....
26.....	1.943	W. M.	S....	.....	.....	.....	.....	.....
P. M. 24.....	1.913	M ₁₋₇₆	S....	.877	4.611	.32	15	Clouds scattered about sky. Cirri prevented earlier observations.
25.....	1.926	M ₁₋₈₀	S....	.....	.....	.....	.....	.....
1.948	M ₁₋₈₁	S....	.....	.....	.....	.....	.....	.....
1.932	W. M.	S....	.....	.....	.....	.....	.....	.....
1.880	M ₂	S....	.....	.879	.590	.27	12	Cirri in a. m. prevented observations.
1.916	M ₁₋₆	S....	.....	.....	.....	.....	.....	.....
1.934	M ₁₋₄₄	S....	.....	.....	.....	.....	.....	.....
1.925	W. M.	S....	.....	.....	.....	.....	.....	.....
27.....	1.919	M ₂₋₄₃	S....	.877	5.545	.37	21	Considerable cirrus in north and east.

1 Air mass 1.36.

2 Air mass 1.31.

3 Air mass 1.34.

4 Air mass 1.76.

5 Air mass 2.33.